

CLAIMS:

1. An isolated, purified or enriched nucleic acid for production of a polyketide of Formula I comprising a nucleic acid encoding at least one domain of the polyketide synthase system formed by the polyketide synthases of SEQ ID NOS: 21, 23, 25, 27, 29, 31, 33, 35 and 37.
2. A nucleic acid of claim 1 selected from the group consisting of SEQ ID NOS: 22, 24, 26, 28, 30, 32, 34, 36 and 38.
3. The nucleic acid of claim 2, wherein said nucleic acid has a sequence represented by SEQ ID NO: 22.
4. The nucleic acid of claim 2, wherein said nucleic acid has a sequence represented by SEQ ID NO: 24.
5. The nucleic acid of claim 2, wherein said nucleic acid has a sequence represented by SEQ ID NO: 26.
6. The nucleic acid of claim 2, wherein said nucleic acid has a sequence represented by SEQ ID NO: 28.
7. The nucleic acid of claim 2, wherein said nucleic acid has a sequence represented by SEQ ID NO: 30.
8. The nucleic acid of claim 2, wherein said nucleic acid has a sequence represented by SEQ ID NO: 32.
9. The nucleic acid of claim 2, wherein said nucleic acid has a sequence represented by SEQ ID NO: 34.

10. The nucleic acid of claim 2, wherein said nucleic acid has a sequence represented by SEQ ID NO: 36.
11. The nucleic acid of claim 2, wherein said nucleic acid has a sequence represented by SEQ ID NO: 38.
12. The isolated, purified or enriched nucleic acid of claim 3, wherein said nucleic acid comprises a nucleic acid sequence selected from the group consisting of:
 - a) the nucleic acid of residues 169-354 of SEQ ID NO: 22, the nucleic acid of residues 421-1698 of SEQ ID NO: 22, the nucleic acid of residues 1789-3093 of SEQ ID NO: 22, the nucleic acid of residues 3910-4551 of SEQ ID NO: 22, the nucleic acid of residues 4807-4992 of SEQ ID NO: 22, the nucleic acid of residues 5068-6354 of SEQ ID NO: 22, the nucleic acid of residues 6403-7686 of SEQ ID NO: 22, the nucleic acid of residues 8497-9135 of SEQ ID NO: 22, the nucleic acid of residues 9388-9573 of SEQ ID NO: 22, the nucleic acid of residues 9643-10920 of SEQ ID NO: 22, the nucleic acid of residues 10978-12267 of SEQ ID NO: 22, the nucleic acid of residues 12304-12624 of SEQ ID NO: 22, the nucleic acid of residues 13834-14487 of SEQ ID NO: 22, the nucleic acid of residues 14731-14916 of SEQ ID NO: 22, the nucleic acid of residues 15019-16314 of SEQ ID NO: 22, the nucleic acid of residues 16378-17649 of SEQ ID NO: 22, the nucleic acid of residues 18439-19080 of SEQ ID NO: 22, the nucleic acid of residues 19330-19515 of SEQ ID NO: 22, the nucleic acid of residues 19585-20862 of SEQ ID NO: 22, the nucleic acid of residues 20935-22206 of SEQ ID NO: 22, the nucleic acid of residues 23107-23754 of SEQ ID NO: 22, the nucleic acid of residues 24004-24189 of SEQ ID NO: 22;
 - b) a nucleic acid having at least 80% identity to a nucleic acid of SEQ ID NO: 22;
 - c) a nucleic acid having at least 80% identity to a nucleic acid of a); and

d) a nucleic acid complementary to a nucleic acid of a), b) or c).

13. The isolated, purified or enriched nucleic acid of claim 4, wherein said nucleic acid comprises a nucleic acid sequence selected from the group consisting of:

- a) the nucleic acid of residues 109-1386 of SEQ ID NO: 24, the nucleic acid of residues 1477-2757 of SEQ ID NO: 24, the nucleic acid of residues 2794-3114 of SEQ ID NO: 24, the nucleic acid of residues 4231-4881 of SEQ ID NO: 24, the nucleic acid of residues 5116-5301 of SEQ ID NO: 24, the nucleic acid of residues 5380-6645 of SEQ ID NO: 24, the nucleic acid of residues 6694-7977 of SEQ ID NO: 24, the nucleic acid of residues 8878-9519 of SEQ ID NO: 24, the nucleic acid of residues 9772-9957 of SEQ ID NO: 24;
- b) a nucleic acid having at least 80% identity to a nucleic acid of SEQ ID NO: 24;
- c) a nucleic acid having at least 80% identity to a nucleic acid of a); and
- d) a nucleic acid complementary to a nucleic acid of a), b) or c).

14. The isolated, purified or enriched nucleic acid of claim 5, wherein said nucleic acid comprises a nucleic acid sequence selected from the group consisting of:

- a) the nucleic acid of residues 106-1383 of SEQ ID NO: 26, the nucleic acid of residues 1447-2721 of SEQ ID NO: 26, the nucleic acid of residues 2755-3081 of SEQ ID NO: 26, the nucleic acid of residues 4315-4965 of SEQ ID NO: 26, the nucleic acid of residues 5206-5391 of SEQ ID NO: 26, the nucleic acid of residues 5491-6768 of SEQ ID NO: 26, the nucleic acid of residues 6841-8142 of SEQ ID NO: 26, the nucleic acid of residues 8941-9582 of SEQ ID NO: 26, the nucleic acid of residues 9832-10017 of SEQ ID NO: 26, the nucleic acid of residues 10081-11358 of SEQ ID NO: 26, the nucleic acid of residues 11407-12675 of SEQ ID NO: 26, the nucleic acid of residues 13480-14118 of SEQ ID NO: 26, the nucleic acid

of residues 14383-14568 of SEQ ID NO: 26, the nucleic acid of residues 14638-15912 of SEQ ID NO: 26, the nucleic acid of residues 15967-17244 of SEQ ID NO: 26, the nucleic acid of residues 17278-17598 of SEQ ID NO: 26, the nucleic acid of residues 18880-19530 of SEQ ID NO: 26, the nucleic acid of residues 19795-19980 of SEQ ID NO: 26;

b) a nucleic acid having at least 80% identity to a nucleic acid of SEQ ID NO: 26;

c) a nucleic acid having at least 80% identity to a nucleic acid of a); and

d) a nucleic acid complementary to a nucleic acid of a), b) or c).

15. The isolated, purified or enriched nucleic acid of claim 6, wherein said nucleic acid comprises a nucleic acid sequence selected from the group consisting of:

a) the nucleic acid of residues 103-1380 of SEQ ID NO: 28, the nucleic acid of residues 1450-2760 of SEQ ID NO: 28, the nucleic acid of residues 3583-4218 of SEQ ID NO: 28, the nucleic acid of residues 4468-4653 of SEQ ID NO: 28;

b) a nucleic acid having at least 80% identity to a nucleic acid of SEQ ID NO: 28;

c) a nucleic acid having at least 80% identity to a nucleic acid of a); and

d) a nucleic acid complementary to a nucleic acid of a), b) or c).

16. The isolated, purified or enriched nucleic acid of claim 7, wherein said nucleic acid comprises a nucleic acid sequence selected from the group consisting of:

a) the nucleic acid of residues 103-1380 of SEQ ID NO: 30, the nucleic acid of residues 1459-2754 of SEQ ID NO: 30, the nucleic acid of residues 3655-4293 of SEQ ID NO: 30, the nucleic acid of residues 4540-4725 of SEQ ID NO: 30, the nucleic acid of residues 4804-6081 of SEQ ID NO: 30, the nucleic acid of residues 6136-7419 of SEQ ID NO: 30, the nucleic acid of residues 7456-7776 of SEQ ID NO: 30, the nucleic acid of residues

8938-9588 of SEQ ID NO: 30, the nucleic acid of residues 9832-10017 of SEQ ID NO: 30, the nucleic acid of residues 10087-11364 of SEQ ID NO: 30, the nucleic acid of residues 11428-12711 of SEQ ID NO: 30, the nucleic acid of residues 12745-13065 of SEQ ID NO: 30, the nucleic acid of residues 14278-14928 of SEQ ID NO: 30, the nucleic acid of residues 15187-15372 of SEQ ID NO: 30;

- b) a nucleic acid having at least 80% identity to a nucleic acid of SEQ ID NO: 30;
- c) a nucleic acid having at least 80% identity to a nucleic acid of a); and
- d) a nucleic acid complementary to a nucleic acid of a), b) or c).

17. The isolated, purified or enriched nucleic acid of claim 8, wherein said nucleic acid comprises a nucleic acid sequence selected from the group consisting of:

- a) the nucleic acid of residues 103-1380 of SEQ ID NO: 32, the nucleic acid of residues 1438-2742 of SEQ ID NO: 32, the nucleic acid of residues 2776-3096 of SEQ ID NO: 32, the nucleic acid of residues 4267-4917 of SEQ ID NO: 32, the nucleic acid of residues 5209-5394 of SEQ ID NO: 32, the nucleic acid of residues 5464-6741 of SEQ ID NO: 32, the nucleic acid of residues 6787-8070 of SEQ ID NO: 32, the nucleic acid of residues 8107-8427 of SEQ ID NO: 32, the nucleic acid of residues 9562-10212 of SEQ ID NO: 32, the nucleic acid of residues 10447-10632 of SEQ ID NO: 32, the nucleic acid of residues 10702-11979 of SEQ ID NO: 32, the nucleic acid of residues 12049-13326 of SEQ ID NO: 32, the nucleic acid of residues 13366-13686 of SEQ ID NO: 32, the nucleic acid of residues 14932-15582 of SEQ ID NO: 32, the nucleic acid of residues 15853-16038 of SEQ ID NO: 32;
- b) a nucleic acid having at least 80% identity to a nucleic acid of SEQ ID NO: 32;
- c) a nucleic acid having at least 80% identity to a nucleic acid of a); and
- d) a nucleic acid complementary to a nucleic acid of a), b) or c).

18. The isolated, purified or enriched nucleic acid of claim 9, wherein said nucleic acid comprises a nucleic acid sequence selected from the group consisting of:

- a) the nucleic acid of residues 103-1380 of SEQ ID NO: 34, the nucleic acid of residues 1441-2751 of SEQ ID NO: 34, the nucleic acid of residues 3613-4248 of SEQ ID NO: 34, the nucleic acid of residues 4498-4683 of SEQ ID NO: 34, the nucleic acid of residues 4753-6030 of SEQ ID NO: 34, the nucleic acid of residues 6199-7515 of SEQ ID NO: 34, the nucleic acid of residues 8356-8994 of SEQ ID NO: 34, the nucleic acid of residues 9247-9432 of SEQ ID NO: 34;
- b) a nucleic acid having at least 80% identity to a nucleic acid of SEQ ID NO: 34;
- c) a nucleic acid having at least 80% identity to a nucleic acid of a); and
- d) a nucleic acid complementary to a nucleic acid of a), b) or c).

19. The isolated, purified or enriched nucleic acid of claim 10, wherein said nucleic acid comprises a nucleic acid sequence selected from the group consisting of:

- a) the nucleic acid of residues 118-1395 of SEQ ID NO: 36, the nucleic acid of residues 1507-2823 of SEQ ID NO: 36, the nucleic acid of residues 2860-3180 of SEQ ID NO: 36, the nucleic acid of residues 4366-5016 of SEQ ID NO: 36, the nucleic acid of residues 5251-5436 of SEQ ID NO: 36, the nucleic acid of residues 5503-6780 of SEQ ID NO: 36, the nucleic acid of residues 6841-8154 of SEQ ID NO: 36, the nucleic acid of residues 8191-8511 of SEQ ID NO: 36, the nucleic acid of residues 9562-10638 of SEQ ID NO: 36, the nucleic acid of residues 10651-11301 of SEQ ID NO: 36, the nucleic acid of residues 11536-11721 of SEQ ID NO: 36, the nucleic acid of residues 11794-13071 of SEQ ID NO: 36, the nucleic acid of residues 13117-14409 of SEQ ID NO: 36, the nucleic acid of residues 14443-14763 of SEQ ID NO: 36, the nucleic acid of residues 15898-16548

of SEQ ID NO: 36, the nucleic acid of residues 16789-16974 of SEQ ID NO: 36, the nucleic acid of residues 17056-18333 of SEQ ID NO: 36, the nucleic acid of residues 18391-19671 of SEQ ID NO: 36, the nucleic acid of residues 19714-20034 of SEQ ID NO: 36, the nucleic acid of residues 21184-21834 of SEQ ID NO: 36, the nucleic acid of residues 22087-22272 of SEQ ID NO: 36;

- b) a nucleic acid having at least 80% identity to a nucleic acid of SEQ ID NO: 36; and
- c) a nucleic acid having at least 80% identity to a nucleic acid of a); and
- d) a nucleic acid complementary to a nucleic acid of a), b) or c).

20. The isolated, purified or enriched nucleic acid of claim 11, wherein said nucleic acid comprises a nucleic acid sequence selected from the group consisting of:

- a) the nucleic acid of residues 100-1377 of SEQ ID NO: 38, the nucleic acid of residues 1504-2778 of SEQ ID NO: 38, the nucleic acid of residues 2812-3132 of SEQ ID NO: 38, the nucleic acid of residues 4258-4908 of SEQ ID NO: 38, the nucleic acid of residues 5143-5328 of SEQ ID NO: 38, the nucleic acid of residues 5395-6672 of SEQ ID NO: 38, the nucleic acid of residues 6739-8019 of SEQ ID NO: 38, the nucleic acid of residues 8056-8376 of SEQ ID NO: 38, the nucleic acid of residues 9607-10257 of SEQ ID NO: 38, the nucleic acid of residues 10537-10722 of SEQ ID NO: 38, the nucleic acid of residues 10945-11616 of SEQ ID NO: 38;
- b) a nucleic acid having at least 80% identical to a nucleic acid of SEQ ID NO: 38;
- c) a nucleic acid having at least 80% identity to a nucleic acid of a); and
- d) a nucleic acid complementary to a nucleic acid of a), b) or c).

21. An isolated, purified or enriched nucleic acid for the production of a polyene polyketide, wherein said nucleic acid is selected from the group consisting of:

- a) a nucleic acid of SEQ ID NOS: 3, 5, 7, 9, 11, 13, 15, 17, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78;
 - b) a nucleic acid encoding a polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 19, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77;
 - c) a nucleic acid having at least 75% identity to a nucleic acid of (a) or (b) ; and
 - d) a nucleic acid complementary to a nucleic acid of (a), (b) or (c).
22. An isolated, purified or enriched nucleic acid hybridizable under stringent conditions to the nucleic acid of claim 1 and substitutable for the nucleic acid to which it specifically hybridizes to direct the synthesis of a compound of Formula 1.
23. An expression vector comprising a nucleic acid of claim 1.
24. A host cell transformed with an expression vector of claim 23.
25. A cosmid selected from the group consisting of the cosmid deposited under IDAC accession no. 250203-01, the cosmid deposited under IDAC accession no. 250203-02, the cosmid deposited under IDAC accession no. 250203-03, the cosmid deposited under IDAC accession no. 250203-04 and the cosmid deposited under IDAC accession no. 250203-05.
26. A cosmid of claim 25, wherein the cosmid is inserted into a prokaryotic host for expressing a product.
27. The cosmid of claim 26 wherein the host is *E. coli*, *Streptomyces lividans*, *Streptomyces griseofuscus*, *Streptomyces ambofaciens*, *Actinomycetes*, *Bacillus spp.*, *Corynebacteria spp.*, or *Thermoactinomyces spp.*

28. An isolated polypeptide for the production of a polyketide of Formula I comprising, a domain of a polyketide synthase, wherein said polyketide synthase has an amino acid sequence of SEQ ID NOS: 21, 23, 25, 27, 29, 31, 33, 35 or 37.

29. The polypeptide of claim 28, wherein said domain is selected from the group consisting of a β -ketoacyl synthase (KS) domain, an acyl carrier protein (ACP) domain, an acyl transferase (AT) domain, a ketoreductase (KR) domain, an enoyl reductase (ER) domain, a thioesterase (TE) domain and a dehydratase (DH) domain.

30. The isolated polypeptide sequence of claim 29, wherein the KS domain comprises a sequence selected from the group consisting of:

- a) amino acid residues 141 to 566 of SEQ ID NO: 21,
- b) amino acid residues 1690 to 2118 of SEQ ID NO: 21,
- c) amino acid residues 3215 to 3640 of SEQ ID NO: 21,
- d) amino acid residues 5007 to 5438 of SEQ ID NO: 21,
- e) amino acid residues 6529 to 6954 of SEQ ID NO: 21,
- f) amino acid residues 37 to 462 of SEQ ID NO: 23,
- g) amino acid residues 1794 to 2215 of SEQ ID NO: 22,
- h) amino acid residues 36 to 461 of SEQ ID NO: 25,
- i) amino acid residues 1831 to 2256 of SEQ ID NO: 25,
- j) amino acid residues 3361 to 3786 of SEQ ID NO: 25,
- k) amino acid residues 4880 to 5304 of SEQ ID NO: 25,
- l) amino acid residues 35 to 460 of SEQ ID NO: 27,
- m) amino acid residues 35 to 460 of SEQ ID NO: 29,
- n) amino acid residues 1602 to 2027 of SEQ ID NO: 29,
- o) amino acid residues 3363 to 3788 of SEQ ID NO: 29,
- p) amino acid residues 35 to 460 of SEQ ID NO: 31,
- q) amino acid residues 1822 to 2247 of SEQ ID NO: 31,
- r) amino acid residues 3568 to 3993 of SEQ ID NO: 31,
- s) amino acid residues 35 to 460 of SEQ ID NO: 33,
- t) amino acid residues 1585 to 2010 of SEQ ID NO: 33,
- u) amino acid residues 40 to 465 of SEQ ID NO: 35,
- v) amino acid residues 1835 to 2260 of SEQ ID NO: 35,
- w) amino acid residues 3932 to 4357 of SEQ ID NO: 35,
- x) amino acid residues 5686 to 6111 of SEQ ID NO: 35,
- y) amino acid residues 34 to 459 of SEQ ID NO: 37,
- z) amino acid residues 1799 to 2224 of SEQ ID NO: 37; and

aa) an amino acid sequence having at least 75% identity to any one of amino acid residues a) to aa).

31. The isolated polypeptide sequence of claim 29, wherein the ACP domain comprises a sequence selected from the group consisting of:

- a) amino acid residues 57 to 118 of SEQ ID NO: 21,
- b) amino acid residues 1603 to 1664 of SEQ ID NO: 21,
- c) amino acid residues 3130 to 3191 of SEQ ID NO: 21,
- d) amino acid residues 4911 to 4972 of SEQ ID NO: 21,
- e) amino acid residues 6444 to 6505 of SEQ ID NO: 21,
- f) amino acid residues 8002 to 8063 of SEQ ID NO: 21,
- g) amino acid residues 1706 to 1767 of SEQ ID NO: 23,
- h) amino acid residues 3258 to 3319 of SEQ ID NO: 23,
- i) amino acid residues 1736 to 1797 of SEQ ID NO: 25,
- j) amino acid residues 3278 to 3339 of SEQ ID NO: 25,
- k) amino acid residues 4795 to 4856 of SEQ ID NO: 25,
- l) amino acid residues 6599 to 6660 of SEQ ID NO: 25,
- m) amino acid residues 1490 to 1551 of SEQ ID NO: 27,
- n) amino acid residues 1514 to 1575 of SEQ ID NO: 29,
- o) amino acid residues 3278 to 3339 of SEQ ID NO: 29,
- p) amino acid residues 5060 to 5124 of SEQ ID NO: 29,
- q) amino acid residues 1737 to 1798 of SEQ ID NO: 31,
- r) amino acid residues 3483 to 3544 of SEQ ID NO: 31,
- s) amino acid residues 5285 to 5346 of SEQ ID NO: 31,
- t) amino acid residues 1500 to 1561 of SEQ ID NO: 33,
- u) amino acid residues 3083 to 3144 of SEQ ID NO: 35,
- v) amino acid residues 1751 to 1812 of SEQ ID NO: 35,
- w) amino acid residues 3846 to 3907 of SEQ ID NO: 35,
- x) amino acid residues 5597 to 5658 of SEQ ID NO: 35,
- y) amino acid residues 7363 to 7424 of SEQ ID NO: 35,
- z) amino acid residues 1715 to 1776 of SEQ ID NO: 37,
- aa) amino acid residues 3513 to 3574 of SEQ ID NO: 37, and
- bb) an amino acid sequence having at least 75% identity to any one of amino acid residues a) to z).

32. The isolated polypeptide sequence of claim 29, wherein said AT domain comprises a sequence selected from the group consisting of:

- a) amino acid residues 597 to 1013 of SEQ ID NO: 21,
- b) amino acid residues 2135 to 2562 of SEQ ID NO: 21,
- c) amino acid residues 3660 to 4089 of SEQ ID NO: 21,
- d) amino acid residues 5460 to 5883 of SEQ ID NO: 21,
- e) amino acid residues 6979 to 7402 of SEQ ID NO: 21,
- f) amino acid residues 493 to 919 of SEQ ID NO: 23,

- g) amino acid residues 2232 to 2659 of SEQ ID NO: 23,
- h) amino acid residues 483 to 907 of SEQ ID NO: 25,
- i) amino acid residues 2281 to 2714 of SEQ ID NO: 25,
- j) amino acid residues 3803 to 4225 of SEQ ID NO: 25,
- k) amino acid residues 5323 to 5748 of SEQ ID NO: 25,
- l) amino acid residues 484 to 920 of SEQ ID NO: 27,
- m) amino acid residues 487 to 918 of SEQ ID NO: 29,
- n) amino acid residues 2046 to 2473 of SEQ ID NO: 29,
- o) amino acid residues 3810 to 4237 of SEQ ID NO: 29,
- p) amino acid residues 480 to 914 of SEQ ID NO: 31,
- q) amino acid residues 2263 to 2690 of SEQ ID NO: 31,
- r) amino acid residues 4017 to 4442 of SEQ ID NO: 31,
- s) amino acid residues 481 to 917 of SEQ ID NO: 33,
- t) amino acid residues 2067 to 2505 of SEQ ID NO: 33,
- u) amino acid residues 503 to 941 of SEQ ID NO: 35,
- v) amino acid residues 2281 to 2718 of SEQ ID NO: 35,
- w) amino acid residues 4373 to 4803 of SEQ ID NO: 35,
- x) amino acid residues 6131 to 6557 of SEQ ID NO: 35,
- y) amino acid residues 502 to 926 of SEQ ID NO: 37,
- z) amino acid residues 2247 to 2673 of SEQ ID NO: 37; and
- aa) an amino acid sequence having at least 75% identity to any one of amino acid residues a) to z).

33. The isolated polypeptide sequence of claim 29, wherein said KR domain comprises a sequence selected from the group consisting of:

- a) amino acid residues 1304 to 1517 of SEQ ID NO: 21,
- b) amino acid residues 2833 to 3045 of SEQ ID NO: 21,
- c) amino acid residues 4612 to 4829 of SEQ ID NO: 21,
- d) amino acid residues 6147 to 6360 of SEQ ID NO: 21,
- e) amino acid residues 7703 to 7918 of SEQ ID NO: 21,
- f) amino acid residues 1411 to 1627 of SEQ ID NO: 23,
- g) amino acid residues 2960 to 3173 of SEQ ID NO: 23,
- h) amino acid residues 1439 to 1655 of SEQ ID NO: 25,
- i) amino acid residues 2981 to 3194 of SEQ ID NO: 25,
- j) amino acid residues 4494 to 4706 of SEQ ID NO: 25,
- k) amino acid residues 6294 to 6510 of SEQ ID NO: 25,
- l) amino acid residues 1195 to 1406 of SEQ ID NO: 27,
- m) amino acid residues 1219 to 1431 of SEQ ID NO: 29,
- n) amino acid residues 2980 to 3196 of SEQ ID NO: 29,
- o) amino acid residues 4760 to 4976 of SEQ ID NO: 29,
- p) amino acid residues 1423 to 1639 of SEQ ID NO: 31,
- q) amino acid residues 3188 to 3404 of SEQ ID NO: 31,
- r) amino acid residues 4978 to 5194 of SEQ ID NO: 31,
- s) amino acid residues 1205 to 1416 of SEQ ID NO: 33,
- t) amino acid residues 2786 to 2998 of SEQ ID NO: 33,

- u) amino acid residues 1456 to 1672 of SEQ ID NO: 35,
- v) amino acid residues 3551 to 3767 of SEQ ID NO: 35,
- w) amino acid residues 5300 to 5516 of SEQ ID NO: 35,
- x) amino acid residues 7062 to 7288 of SEQ ID NO: 35,
- y) amino acid residues 1420 to 1636 of SEQ ID NO: 37,
- z) amino acid residues 3203 to 3419 of SEQ ID NO: 37; and
- aa) an amino acid sequence having at least 75% identity to any one of the amino acid residues of a) to z).

34. The isolated polypeptide sequence of claim 29, wherein the DH domain comprises a sequence selected from the group consisting of:

- a) amino acid residues 4102 to 4208 of SEQ ID NO: 21,
- b) amino acid residues 932 to 1038 of SEQ ID NO: 23,
- c) amino acid residues 919 to 1027 of SEQ ID NO: 25,
- d) amino acid residues 5761 to 5866 of SEQ ID NO: 25,
- e) amino acid residues 2486 to 2592 of SEQ ID NO: 29,
- f) amino acid residues 926 to 1032 of SEQ ID NO: 31,
- g) amino acid residues 2703 to 2809 of SEQ ID NO: 31,
- h) amino acid residues 4456 to 4562 of SEQ ID NO: 31,
- i) amino acid residues 954 to 1060 of SEQ ID NO: 35,
- j) amino acid residues 2731 to 2837 of SEQ ID NO: 35,
- k) amino acid residues 4815 to 4921 of SEQ ID NO: 35,
- l) amino acid residues 6572 to 6678 of SEQ ID NO: 35,
- m) amino acid residues 938 to 1044 of SEQ ID NO: 37;
- n) amino acid residues 2686 to 2792 of SEQ ID NO: 37; and
- o) an amino acid sequence having at least 75% identity to any one of the amino acid residues of a) to n).

35. The isolated polypeptide sequence of claim 29, wherein said ER domain comprises a sequence with the amino acid residues 3188 to 3546 of SEQ ID NO: 35, and any amino acid sequence having at least 75% identity thereto.

36. The isolated polypeptide sequence of claim 29, wherein said TE domain comprises a sequence with the amino acid residues 3649 to 3872 of SEQ ID NO: 37, and any amino acid sequence having at least 75% identity thereto.

37. An isolated polypeptide for production of a polyketide of Formula I selected from the group consisting of:

- a) a polypeptide of any one of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 19, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77;
- b) a polypeptide which is at least 75% identical in amino acid sequence to any one of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 19, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77.

38. A method of making a polypeptide having a sequence selected from the group consisting of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77 comprising the steps of: (a) introducing a nucleic acid encoding said polypeptide, said nucleic acid being operably linked to a promoter, into a bacterial host cell; and (b) culturing the transformed host cell under conditions which result in the expression of the polypeptide.